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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Mark T. Wajer, et al

Serial No. 09/769,761

Group Art Unit: 1731

Filing Date: January 26, 2001

Examiner: S. Alvo

For: PROCESS EMPLOYING MAGNESIUM HYDROXIDE IN
PEROXIDE BLEACHING OF MECHANICAL PULP

Assistant Commissioner for Patents
Washington, D.C. 20231

DECLARATION TRAVERSING CITED REFERENCES (37 C.F.R. 1.132)

The undersigned parties hereby declare, as follows:

1. The persons making this Declaration are Mark T. Wajer ("Wajer"), Business Development Manager, and Aileen Gibson ("Gibson"), Product Development Manager, for Martin Marietta Magnesia Specialties ("MMMS").
2. Wajer and Gibson are the co-inventors in the Application.
3. MMMS is the assignee of the Application.
4. In the opinion of the undersigned parties, the process disclosed in WO 96/41917 ("WO '917") and/or U.S. 4,029,543 to Lindahl ("LINDAHL") is totally distinguishable from the process of claims 1-14, 16-30, 32-45, and 47-57 in the above referenced patent application forth below in paragraphs 5-13.
5. The WO '917 reference relates to the use of MgO as the sole alkaline source

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in a pulp bleaching process. Our process relates to a different alkaline source, namely, magnesium hydroxide.

6. WO '917 relates only to the use of MgO in the form of solid particles of varying size. We employ magnesium hydroxide in the form of an aqueous slurry and not in the form of solid particles.

7. WO '917 states that in order to achieve "maximum efficiency" the MgO particles "must be added to the pulp in the form of a powder or slurry prepared in situ". This statement means that to achieve maximum efficiency, target properties such as brightness must be maximized. To accomplish this according to WO '917, MgO in particulate form must be added to the pulp simultaneously with the peroxide or prior to the addition of peroxide. This is totally contrarily to our process of making a bleached mechanical wood pulp wherein a plurality of slurries, namely, an aqueous slurry of mechanical wood pulp, an aqueous bleaching mixture consisting essentially of water and hydrogen peroxide, and the aqueous magnesium hydroxide slurry, are combined prior to bleaching. Neither the aqueous slurry of mechanical wood pulp nor the aqueous bleaching mixture is combined with magnesium hydroxide in a powdery condition as required by WO '917.

8. WO '917 discloses a "maximum target ISO Brightness of 65". Our process is directed to producing a bleached mechanical pulp having an ISO brightness of either (a) up to about 75%, or (b) more than about 65 %. Neither of these ISO brightness levels are achieved by the method of WO '917.

9. WO '917 states that "...commercial usage of magnesium oxide as a sole alkaline source in bleaching of wood pulp may be achieved by employing MgO particles...of between 20 to 60 m²/g.... By using such parameter(s),...a maximum target of ISO brightness of 65 (*can be achieved*)....". The data in FIG. 3 of WO '917 in fact shows that maximum ISO brightnesses of only up to about 60 to 61+ can be achieved at surface areas of between 35 m²/g and 142 m²/g. ISO brightness above 61+ were not

achieved according to the WO '917 data. On the other hand, ISO brightnesses of less than 60 will result, according to the FIG. 3 data, if the surface area of the MgO particles is less than 35 m²/g or greater than 142 m²/g.

10. On the other hand, our process employs magnesium hydroxide which has a BET surface area of about 7 to about 15 m²/g. This BET surface area is clearly well below the range described in WO '917 which is required to achieve a maximum ISO brightness value of 60 to 61+, not an ISO brightness above 65. Therefore, an unexpected result occurs when our process is employed. More specifically, our invention teaches that when magnesium hydroxide having a BET surface area of about 7 to about 15 m²/g is provided, an ISO brightness of (a) up to about 75%, or (b) more than about 65 % will result for a bleached mechanical wood pulp produced thereby.

11. The Lindahl reference discloses magnesium oxide, magnesium hydroxide, magnesium carbonate, magnesium chloride, magnesium nitrate, magnesium acetate, magnesium sulfate, etc., all of which are not employed as an alkali source. All of these magnesium compounds may work in Lindahl, but they do not effectively work as alkali sources in our process. The amount of magnesium hydroxide in the bleaching pulp mixture of our invention is at least about 0.5 wt %, based on pulp dry mass. In Lindahl, Mg(OH)₂ is being employed as a stabilizer. This is clearly evidenced by the fact that the amounts of Mg(OH)₂ actually being used in Lindahl is only 0.05% to 0.1%. In order to be effective as an alkali source in bleaching of mechanical pulp, the amount of Mg(OH)₂ must be significantly higher than disclosed by Lindahl. Adding insufficient amounts of Mg(OH)₂ to the peroxide for bleaching purposes will result in a substantially reduced level of brightness (less than the amount required to produce bleached pulp at the requisite ISO brightness level. Applicants are adding Mg(OH)₂ as an alkali source at levels 10 to 100 times greater because the HOOH used in bleaching the mechanical pulp demands it. This level of Mg(OH)₂ addition is done for maximizing the brightness of the pulp.

12. In Lindahl the actual bleaching pH in Lindahl is not 7-9 as stated by the Examiner. Our invention is directed to a bleaching pulp mixture having a pH of from about 5.0 to 8.5. The pH which the Examiner refers to in the Office Action is the pH of the spent liquor. The pH values of the present invention are for the bleaching pulp mixture. In Lindahl, column 3, line 66, the pH after the addition to the pulp is disclosed as 9.8 to 10.8.

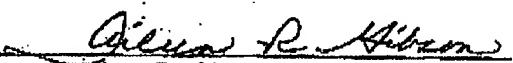
13. The Examiner states that it is obvious to use the bleach conditions of Lindahl as the peroxide bleach conditions. Lindahl's conditions only apply to a system that utilizes caustic soda and sodium silicate. They do not apply to our process. Instead, the bleach conditions of our process apply to a system that uses magnesium hydroxide in the absence of caustic soda and sodium silicate.

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated this 22 day of September, 2004.



Mark T. Wajer



Aileen R. Gibson

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